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Effective components of self-management programs for chronic obstructive pulmonary disease patients: scoping review

Abstract

Introduction: To date, little guidance is available to support the development of effective programs for improving self-management in chronic obstructive pulmonary disease (COPD) patients. Yet, given the global burden of this disease, it seems important to identify the components of a self-management program that are effective in terms of health outcomes for COPD patients.

Objectives: This review aims to identify effective elements of a self-management program for COPD patients, the ones that may impact quality of life, emergency visits, and rehospitalization rates.

Material and methods: A systematic literature search of three databases (Medline, Cochrane, and CINAHL) was conducted to identify studies on self-management of COPD, with three limiting parameters: published in twelve years prior to November 2019, in English or French, and including patients over 40 years old. Prisma was used to guide the work process.

Results: The search yielded 361 studies from the three electronic databases by applying limiting criteria, and after removing duplicates. Sixty-five articles were identified as relevant based on their titles and abstracts. However, 16 documents were retained after full reading. The analysis of the included articles identified 4 components in self-management programs for COPD patients: initiation stage of the intervention, educational sessions, support and monitoring methods.

Conclusions: Although the combination of self-management program initiation, educational sessions, support and monitoring methods were effective, further research is needed to identify the components that have better impact on COPD patients' skills and quality of life.

Key words: COPD, self-care, self-management, program components

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Introduction

The burden of non-communicable diseases is increasing rapidly worldwide, and by 2020, they would account for nearly three-quarters of global deaths [1]. The World Health Organization (WHO) has called on all countries to provide interventions, including self-care interventions, to address this global epidemic [2].

Chronic obstructive pulmonary disease (COPD) is one of the leading causes of morbidity and mortality worldwide [2]. Although the WHO had predicted in 2004 that COPD would become the third leading cause of death in the world by

2030, this threshold has already been reached in 2010 [3]. Moreover, COPD is associated with a significant economic burden [4], and exacerbations account for most of the costs associated with the disease [5].

Complete recovery from the disease is currently not achievable and as it progresses, patients experience a reduced breathing capacity and disability to carry out activities of daily living, thus deterioration in their quality of life [6]. Therefore, researchers are increasingly interested in maintaining the quality of life of COPD patients [7]. Nonpharmacological interventions, such as smoking cessation, and self-management

are considered an integral component of the chronic care model of COPD management [2]. COPD self-management interventions was defined as structured but personalized and often multicomponent interventions, with the goal of motivating, engaging and helping patients to positively adapt their behavior(s) and develop their skills to better manage their disease [8]. Better self-management could improve the quality of life and reduce emergency visits and hospital admissions for COPD patients [9]. This study aims to identify effective components of a self-management program for COPD patients, the ones that may affect quality of life, emergency visits, and rehospitalization rates.

Material and methods

Study type

This scoping review was carried out using the following databases: Cochrane, Medline and CINAHL. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) was applied to guide the work process [10].

Eligibility criteria for the work

The inclusion criteria were based on the “PICOTS” criteria [11, 12].

- Population: Adult COPD patients aged 40 years and over, with no restriction on the stage of the disease;
- Intervention: Self-management program for non-hospitalized COPD patients;
- Comparisons: No comparator defined;
- Outcomes: At least one of the following: impact on the quality of life, rehospitalization rate and emergency visits;
- Type of the study: Quantitative (RCT, NRCT) and all types of qualitative studies;
- Setting: Outside.

In addition, the studies included had to be in English or French and published in the twelve years prior to November 2019.

The summaries were read, as was the full article when in doubt about the inclusion criteria.

In the first analysis, the studies that met the inclusion criteria and generated new insights into the components of a COPD self-management program in patients over 40 years were selected as the prevalence of COPD is rare under the age of 40 (0.1%) [13].

The studies not meeting the inclusion criteria, not including COPD patients or study protocols were excluded.

Source of information

The Medline, Cochrane and CINAHL databases were queried, and the reference lists of the included studies analyzed.

Research strategy

A literature search strategy was developed using the Medical Subject Headings (MeSH) thesaurus and key words related to COPD. After the strategy was finalized, it was adapted to the syntax of other databases. The research in the three databases was conducted with the same search and limiting parameters.

Search equation

The search was based on the use of Medical Subject Headings (MeSH terms). That included: Pulmonary Disease, Chronic Obstructive, Lung Disease, Obstructive, Self-Care, Self-Management, Disease Management, Program Evaluation, and Program Development.

The research equation used was: [“program evaluation” (MeSH Terms) OR “program development” (MeSH Terms)] AND [“self-care” (MeSH Terms) OR “self-management” (MeSH Terms)] AND “pulmonary disease, chronic obstructive” (MeSH Terms) AND [“2007/01/01” (PDAT): “2019/12/31” (PDAT)] .

Selection of literature

The study selection process involved several essential steps based on the PRISMA 2009 model [10]. A first screening took into consideration the title; a second identification was carried out on the basis of the abstract of each bibliographic reference retained by the documentary research to eliminate the publications not in the scope of the present study. Finally, the selection of the studies to be included relied on the full text, by applying the eligibility criteria.

Two reviewers independently reanalyzed the titles and abstracts generated by the research equation, then reviewed the full-text reports and decided whether they met the inclusion criteria. The references of included studies were also screened and checked for eligibility. Any disagreements were resolved by discussion between the two reviewers.

Data extraction

The information extracted was as follows: topic of research, publication year, country of the study and participants’ characteristics (age,

Table 1. Analysis criteria of retained articles*

Sections	Number	Control criteria	Yes	No
Introduction				
Objectives	1	The goals and objectives of the study are clearly reported		
Methods				
Eligibility Criteria	2a	An adequate description of the sample and the methods by which the sample has been identified and recruited is present		
	2b	The intervention is specific to COPD patient		
Source of information	3a	The methods used to collect data are described		
	3b	The study used appropriate data collection methods to help understand which components of the self-management program has a positive impact on the expertise of COPD patients		
Process	4a	The intervention process is indicated		
	4b	The components of self-management programs are clearly described		
Results				
Data	5a	The results are consistent with the objective of the study		
	5b	Results specific to each action of the self-management program are present		
Discussion				
Summary of results	6a	An adequate description of the methods used to analyze the data is present		
	6b	The study used appropriate methods to ensure that the data analysis is based on the specific components of a self-management program for COPD patients		
Limitations				
Risk of bias inherent in each of the studies	7	Possible biases or limitations are assessed including biases in outcome, study methodology, or both		
Total			7 sections	12 sub sections

*We evaluated the quality of articles as follows: **A.** High quality if it meets 10 or more criteria; **B.** Average quality if it meets 5–10 criteria; **C.** Low quality if it meets fewer than 5 criteria

severity of illness and comorbidities). Information on the features of intervention quality of life rehospitalization rates, and visits to emergency services was also retrieved.

Data analysis

The principal investigator analyzed the content of each article according to a grid designed to examine the intrinsic qualities of the different parts, based on the PRISMA criteria.

The quality of items was evaluated as follows (Table 1, 2):

- High quality if it meets 10 or more criteria;
- Average quality if it meets 5–10 criteria;
- Low quality if it meets less than 5 criteria.

Results

This scoping review aimed to summarize the different components of a self-management program that positively impact the quality of life of patients with COPD. Such information is essential to the design of effective and specific program for this population.

The search yielded 361 articles from the three electronic databases by applying limiting criteria. Of those, 159 articles were excluded based on the title, and 76 based on the abstract and 53 duplicated articles. The remaining 65 papers were identified as relevant taking into account both the title and the abstract but only 16 were retained after reading the full text (Figure 1).

Table 2. Quality score of retained articles

Articles sections	Sanchez-Nieto <i>et al.</i> 2016 [14]	Turner A. <i>et al.</i> 2014 [24]	Cosgrove D. <i>et al.</i> 2013 [27]	Apps D. L. <i>et al.</i> 2013 [25]	Taylor S.J. <i>et al.</i> 2012 [9]	Wood-Baker R. <i>et al.</i> 2012 [19]	Chuang C. <i>et al.</i> 2011 [15]	Efrainsson O.E. <i>et al.</i> 2008 [23]	Bischoff W.M.A.E <i>et al.</i> 2012 [28]	Paneroni M. <i>et al.</i> 2013 [26]	Hamar B. <i>et al.</i> 2010 [16]	Lomundal K.B. <i>et al.</i> 2007 [17]	Khdour M.R. <i>et al.</i> 2009 [18]	Oancea C. <i>et al.</i> 2015 [20]	Yu S. <i>et al.</i> 2014 [22]	Rose L. <i>et al.</i> 2018 [21]
Objectives	1	1	1	1	1	—	1	1	1	1	1	1	1	1	1	1
Eligibility criteria	2	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2
Source of information	—	1	2	2	1	1	—	1	1	1	1	1	1	1	1	1
Approach	2	2	2	2	2	1	1	2	1	1	—	2	2	1	1	1
Data	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Summary of results	1	1	2	1	1	1	—	1	1	1	—	1	1	1	1	1
Risk of bias inherent in each of studies	1	1	—	—	1	1	—	1	1	1	1	1	1	1	1	1
Total	8	9	11	9	9	7	4	9	8	8	6	9	9	8	8	8
Mode	8															
Median	8															
Mean	8.13															
Variance	2.4															
Standard deviation	1.54															

The 16 included studies were published between 2007 and 2019. Five studies were undertaken in the United Kingdom, and one each in the United States, Australia, Canada, Sweden, Italy, Germany, Norway, Romania, Spain, Netherlands and China. Two studies were qualitative, two were pilot randomized controlled trials, six were observational and six experimental studies (Table 3). Of the 16 programs analyzed, 8 had a follow-up of 1 year [14–21], 4 had a follow-up of 6 months [9, 22–24], and the remaining had a follow-up of 6 weeks [25], 10 months [26], 15 months [27] and 2 years [28]. Only one study excluded patients with very severe COPD [28].

Synthesis of the results

After reading and summarizing the articles, eight intervention components were identified (Table 4): individualized initiation session, group education session, individual training, phone calls, action plan, educational material, daily diary, and text messaging.

These components were grouped into 4 modalities.

The first modality, “**the initiation stage of the intervention**”, is characterized by individualized initiation sessions. The second modality, “**the educational sessions**”, includes individual or group education sessions with the caregiver. The third modality, “**the support material**” encompasses the action plan, educational materials, and text messaging. The fourth modality “**the monitoring method**” uses a daily diary and, in some cases, telephone calls that are also used as a follow-up method, among other ways of support, and sometimes as a training tool.

- Modality I: Initiation into the self-management program: Individualized initiation sessions;
- Modality II: Educational sessions: Group education sessions, individual training, phone calls [16];
- Modality III: Support method: action plan, educational materials, text messaging and telephone calls [17, 21, 25, 28];
- Modality IV: Monitoring method: diary and telephone calls [15, 18, 19, 22].

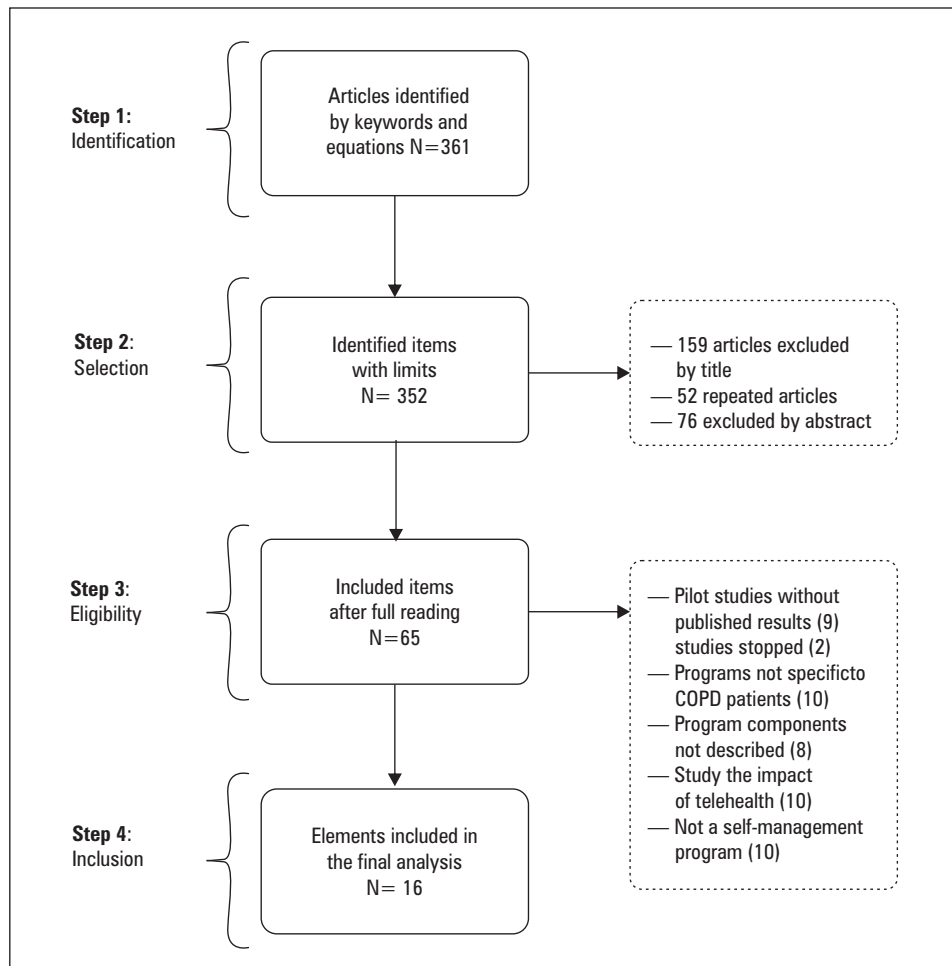


Figure 1. Flowchart for article selection strategy

Modality I: Initiation into the self-management program

Of the 16 selected studies, 5 included the initiation into the self-management program [15, 18, 19, 21, 25]. In 2009, a preliminary assessment of patients participating in the intervention was conducted to determine individual needs [18]. It included data on knowledge of the disease, smoking status, adherence to medication, self-efficacy in managing breathing difficulty, exercise and diet. In another study conducted in 2011 [15], the intervention group received a first face-to-face nursing assessment, during which a spirometry test and a health assessment were performed. At a later stage, an individualized one-hour initiation was conducted for participants in the self-management program; the discussion helped to determine participants' willingness to start a self-management program, explore immediate educational needs, and set objectives [25]. Similarly, in another study, mentors visited the patients at home one week after they were

recruited to perform a general assessment and discuss the main clinical or social problems and set a medium-term goal [19].

Studies showed a decrease in hospital admissions [15, 18, 19], emergency visits [15, 18] and improvement in quality of life [18, 19, 25].

Therefore, the focus and the importance of this first step is to assess the patients' health status, explore their motivation to participate in the program, identify educational difficulties, and finally, set goals. In other words, the purpose of this first step is to adapt and individualize the interventions to each patient.

Modality II: Educational sessions

In all 16 studies that adopted Modality II, educational sessions were delivered by health professionals: five of the interventions were led by nurses [15, 16, 19, 23, 28], four were performed by a multidisciplinary team including nurses [1, 14, 17, 26], one intervention was conducted by a trained tutor with COPD [9], and others were

Table 3. Type of study

Type of study	Articles	Number of participants	Average age	Stage of COPD
Pilot	Chuang C. <i>et al.</i> 2011 (United States)	Control (C) = 141 Intervention (I) = 141	75	NA
	Taylor JC S. <i>et al.</i> 2012 (United Kingdom)	C = 38 I = 78	69.5 (9.8)	Moderate to severe (number not available)
Qualitative	Apps D. L. <i>et al.</i> 2013 (United Kingdom)	20 patient	68	NA
	Cosgrove D. <i>et al.</i> 2013 (United Kingdom)	53 patient	65 (10)	Moderate (II) = 21 Severe (III) = 19 Very severe (IV) = 8
Observational	Oancea C. <i>et al.</i> 2015 (Romania)	C = 24 I = 52	C = 62.7 (4.9) I = 61.2 (5.7)	NA
	Lomundal K.B. <i>et al.</i> 2007 (Norway)	30 self-management 30 pulmonary rehabilitation	67.2 self-management 62.8 pulmonary rehabilitation	NA
	Wood-Baker R. <i>et al.</i> 2012 (Australia)	C = 51 I = 55	69.1 (9.7)	II = 17 III = 49 IV = 39
	Turner A. <i>et al.</i> 2014 (United Kingdom)	18 patients	NA	NA
	Efraimsson O. E. <i>et al.</i> 2008 (Sweden)	C = 26 I = 26	C = 67 I = 66	I = 5 GI/5 GC II = 9 GI/9 GC III = 6 GI/5GC IV = 6 GI/7GC
	Bischoff W.M.A.E <i>et al.</i> 2012 (Netherlands)	Self-management = 55 Routine monitoring = 55 Usual care = 55	Self-management = 65.5 (11.5) Routine monitoring = 65.8 (8.3) Usual care = 63.5 (10.3)	Patients with very severe COPD were excluded (number not available)
Quantitative	Paneroni M. <i>et al.</i> 2013. (Italy)	158	71.1 (8.3)	I = 3.4% II = 29.7% III = 21.4% IV = 45.5%
	Hamar B. <i>et al.</i> 2010 (German)	C = 5,668 I = 17,319	I = 71.2 C = 72.5	(3 less severe — 1 more severe) 3 ≥ 29.7 I 41 C 2 ≥ 46.4 I 37.1 C 1 ≥ 24 I 21.9 C
Experimental (randomized/ non-randomized)	Khdour M.R. <i>et al.</i> 2009 (United Kingdom)	C = 87 I = 86	C = 67.3 (9.2) I = 65.63 (10.1)	C ≥ I = 11 II = 34 III = 27 I ≥ I = 13 II = 37 III = 21
	Sanchez-Nieto <i>et al.</i> 2016 (Spain)	C = 38 I = 47	C = 67.6 ± 6.9 I = 68.4 ± 7.3	IV ≥ C = 71% I = 61.7% II-III ≥ C = 10.5% I = 6.3%
	Yu S. <i>et al.</i> 2014 (China)	C = 42 I = 42	68.29 (7.09)	NA
	Rose L. <i>et al.</i> 2018 (Canada)	C = 191 I = 207	71 (9.5)	Moderate to severe (number not available)

COPD — chronic obstructive pulmonary disease; NA — not available

Table 4. Intervention components

Article modality	Qualita- tive	Pilot																Quantitative																Total
	Apps D. L. <i>et al.</i> 2013 [25]	Cosgrove D. <i>et al.</i> 2013 [27]	Taylor JC S. <i>et al.</i> 2012 [9]	Chuang C. <i>et al.</i> 2011 [15]	Sanchez-Nieto <i>et al.</i> 2016 [14]	Turner A. <i>et al.</i> 2014 [24]	Wood-Baker R. <i>et al.</i> 2012 [19]	Efrainsson O. E. <i>et al.</i> 2008 [23]	Bischoff W.M.A.E <i>et al.</i> 2012 [28]	Paneroni M. <i>et al.</i> 2013 [26]	Hamar B. <i>et al.</i> 2010 [16]	Lomundal K.B. <i>et al.</i> 2007 [17]	Khdour M.R. <i>et al.</i> 2009 [18]	Oancea C. <i>et al.</i> 2015 [20]	Yu S. <i>et al.</i> 2014 [22]	Rose L. <i>et al.</i> 2018 [21]																		
Individualized initiation session	×			×			×							×			×	5																
Group education session		×	×		×	×			×	×		×			×			8																
Individual training					×			×					×			×		4																
Phone calls	×			×			×		×		×	×	×	×		×	×	9																
Action plan	×	×			×		×		×			×	×				×	8																
Educational material	×			×					×	×	×	×	×			×		8																
Daily diary	×						×									×		3																
Text messaging																×		1																

done by a physician [20], a pharmacist [18], or a health professional whose discipline was not specified [21, 22, 25, 27].

Components of educational sessions

The intervention programs analyzed were either group education sessions or one-on-one training sessions. The content of the sessions varied and only one study included both a self-management program designed to provide one-on-one training in inhalation techniques and a group education session [14]. Other researchers examined the effect of programs with individual training sessions [18, 21, 22, 23]. In two studies, patients in the intervention group received education emphasizing self-care capacity, and the education focused on how to support the individuals based on their unique needs and coping skills [21, 23]. In another study, patients were individually educated by a clinical pharmacist, their prescribed medications, the importance of adherence, the inhaler technique and the management of COPD symptoms [18]. In the fourth study, the subjects were trained individually on how to use inhalation devices and maintain the appropriate position, in addition to training on breathing techniques [22].

In summary, the content of the individual training was mainly focused on: anatomy and physiology of the respiratory tract and the effects of COPD, respiration techniques, physical activity, compliance, and other educational topics, such as smoking cessation and dietary counseling.

One of those studies [21] did not result in differences in terms of the quality of life, reduction in frequency of emergency department visits or hospital admissions but contributed to a reduction in mortality of almost half, compared with the usual care group. This intervention did not include a respiratory rehabilitation or formal exercise program.

Finally, one study adopting the group education session showed that a multidisciplinary educational program for patients with COPD is feasible and effective in improving knowledge about disease management [26]. The results from this study also showed that the patients most likely to benefit from education are those with high compliance, low comorbidities, and at least minimal knowledge of the disease and related problems.

Follow-up time

Taylor's study showed that there was no difference between the intervention and control

groups at 2 months' follow-up, but at 6 months, differences appeared in favor of the intervention group with regard to levels of self-reported exercise and quality of life [9]. In Turner's study that used group education sessions, health status and health-related quality of life improved significantly 6 months after program completion [24]. Similarly, in the Lomundal study, participants in the self-management program made a statistically and clinically significant improvement in health-related quality of life (HRQOL) that was maintained over the last six months of the program and during the following year [17]. On the other hand and with respect to the key findings of the Oancea study, the positive effects were observed during six months but no difference between the groups was recorded after this period [20]. Following these results, the training proposed in this study should be repeated once every 6 months to maintain the positive medical effect.

In the 24-month Bischoff study, neither self-management nor routine monitoring showed significant benefits over usual care in terms of the quality of life, frequency of exacerbation or self-efficacy in patients with COPD. In contrast, compared to usual care, patients in the self-management group appeared to be more able to take appropriate measures to manage their exacerbations [28].

Modality III: Support methods

The supportive methods included action plans, educational materials, text messaging and phone calls.

Action plans

Action plans have to do with the exacerbation phase of COPD. In Sanchez-Nieto's study, the action plan consisted of a folder containing written material with four types of colored sheets [14]. The exacerbation sheet explained the symptoms of bronchial infection for which patients had to start taking antibiotics and oral glucocorticoids. Apps *et al.* used a sputum color chart describing normal and flare-up symptoms, and participants were encouraged to follow the advice on the action plan if they feared an outbreak of symptoms [25]. In the other research work, the exacerbation action plan was individualized, covering early recognition and rapid action during an exacerbation [28]. Actions included increasing the use of bronchodilators, initiating permanent prescriptions for prednisone, antibiotics, or both, and contacting the nurse or the general practitioner. In Roses's study, an individualized action plan

was distributed to both intervention and usual care [21], and it was the only study from all 8 that included action plans in their interventions [14, 17–19, 25, 27, 28] that did not reveal an impact on the quality of life, emergency department visits or hospital admissions.

Educational materials, text messaging, and phone calls

All 8 studies that had adopted the educational material used written information [15–18, 22, 25, 26, 28] in form of e-mails [16], manuals [25], papers [28], booklets [17], and brochure [18, 22, 26]. Several support methods were used: interactive tables and tasks to be completed by the participants to make sure knowledge and skills are well acquired (25), summary of all lectures at the end of the course [17], and weekly standardized text message after discharge from the hospital [22]. In all those 8 studies [15–18, 22, 25, 26, 28], the results showed that a structured self-management education program, including educational materials provided an effective method for the management of patients with COPD.

Modality IV: Monitoring methods

The monitoring methods consisted of a daily diary and phone calls. A daily diary was used in 3 studies and participants had to record their walking progress [25], shortness of breath, coughing, spitting, well-being, physical activity, and the use of relieving medications [19, 22]. Those interventions improved compliance, reduced the need for hospital care and improved some aspects of participants' quality of life. Moreover, 5 studies relied on phone calls to followup on patients [15, 18, 19, 21, 22], which gained health benefits through self-management.

Discussion

Among the 16 studies analyzed, 2 were qualitative and tested the effectiveness of a self-management program from both patients' and health professionals' perspectives, and 2 were pilot studies and examined the feasibility, effectiveness and cost-effectiveness of a self-management support program for COPD patients. The remaining studies were randomized or non-randomized and assessed the effect of a self-management program on skills, quality of life, emergency room visits, and hospitalization rates in patients with COPD.

In this paper, we were able to identify studies that assessed different methods of self-management in COPD patients.

Characteristics of participants

Only one study excluded patients with very severe COPD [28]; a meta-analysis later demonstrated the effectiveness of self-management programs in patients with severe COPD, while no significant effects were observed in studies that enrolled individuals with moderate symptoms [29].

Duration of follow-up

Of the 16 programs analyzed, 8 had a follow-up of 1 year [14–21], 4 had a follow-up of 6 months [9, 22–24], and the remaining had a follow-up of 6 weeks [25], 10 months [26], 15 months [27] and 2 years [28].

Researchers suggested that an improvement in the quality of life may take a long time, from 6 to 12 months [30], and that a longer duration of self-management interventions correlates with a reduced number of hospitalizations in patients with COPD [31].

Action

Our research aims to identify the components that have proven effective for a specific self-management program for patients with COPD. In analyzing the articles and their results, the interventions varied but had points in common:

- The initiation intervention sessions adopted in several studies can have a positive effect because they tested the patients' motivation for the intervention, a factor that could contribute to a better outcome of self-management programs [17];
- Action plans engaged patients in the management of their disease;
- Educational materials helped patients in the self-management process;
- The phone calls had intended to motivate, engage, and accompany patients throughout the intervention.

The results of the studies analyzed confirmed that learning is not achieved by a single action or method and requires time. The learning modalities must be varied to consolidate the acquired knowledge in different domains: cognitive, psychomotor, and emotional (including social), in addition to the knowledge acquired on the actions to be undertaken. However, the methods used to collect and analyze data, as presented in the analyzed studies, did not help us understand what components of the self-management program had a positive impact on the expertise of patients with COPD, and this may be the greatest limitation in our paper. On the other hand, the results of an-

other study showed that the patients most likely to benefit from educational interventions are those with high compliance, low comorbidities, and at least minimal knowledge of the disease and related problems [26]. Other studies [9, 22] showed that the effect of self-management education was not evident at three months but gradually increased over time and was apparent at six months. Some researchers have even suggested that training should be repeated once every 6 months to maintain the positive medical effect [20].

Similarly, Jonkaman *et al.* recommend long-lasting self-management strategies rather than brief interventions [31]. Moreover, Newham *et al.* showed a significant improvement in the quality of life in patients with COPD in both individual and group-based self-management programs, and positive effects of multiple-session interventions versus single-session self-management programs [29]. This meta-analysis also showed that self-management programs targeting mental health and physical activity were more effective than those focused solely on symptom management [29].

Conclusions

To date, little guidance is available to support the development of effective programs for improving self-management in COPD patients. It seems obvious that interventions involving only one component, such as written action plans or training sessions, do not produce the desired effects. In this scoping review, 4 components described in 15 studies were identified as having a positive impact on patients' skills and knowledge, quality of life, hospitalization rates and emergency room visits: initiation into the self-management program, educational sessions, support methods and monitoring methods.

However, further research is needed to identify the components that have the best cost/benefit ratios and have a greater impact on patients' skills and lifestyle.

Conflict of interest

The authors report no conflicts of interest in this work.

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